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| **The curriculum for this stage of students’ education has been designed to ensure students understand that Chemistry is about everything. It is the central science that explains how the world around us works.  It enables us to see patterns in the myriads of chemical reactions that occur in nature. The curriculum for this stage of students’ education has been designed to inspire students, nurture their passion for the subject and lay the foundations for further study and the workplace.  Building on work done in KS4, the course will bring to life the real-world contexts and applications of the modules being studied, with emphasis on the application of knowledge and the usefulness of laboratory research.   Students will see how the laws of chemistry and the skills of today’s chemists have been used to control chemical reactions and the importance of chemistry in manufacturing processes.**  |
| **HALF TERM 1:** AMOUNT OF SUBSTANCE/ATOMIC STRUCTURE **STUDENTS MUST KNOW:** **Amount of substance** EGU Avogadro’s number and Moles, Significant figures and Standard form, gas volumes, RFM and Percentage of an element in a compound, empirical formula, ideal gas equation, standard solutions and molarity. Titration Calculations and errors, predicting masses, atom economy, predicting and writing ionic formula.   **Atomic structure** KCHAtomic Structure, The TOF Mass Spectrometer, Electron Configuration, Ionization Energies and Trends. RP1: Making a standard solution and performing titrations**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.  | **HALF TERM 2:** INORGANIC CHEMISTRY/BONDING**STUDENTS MUST KNOW:** **Inorganic Chemistry**   EGU The periodic table, periodicity, Group 2 and group 7 and tests for ions.**Bonding**   KCHIonic bonding, Covalent bonding, charge clouds, shapes of molecules, polarisation, intermolecular forces, metallic bonding and properties of metals.    RP4: Testing for cations and anions including halides**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.  | **HALF TERM 3:**  ENERGETICS/INTRO TO ORGANIC **STUDENTS MUST KNOW:** **Energetics**   EGUEnthalpy, bond enthalpies, measuring enthalpy changes, Hess's Law**Organic Chemistry**   KCHIntroduction to Organic Chemistry, Naming and drawing Organic Compounds, Isomers, Alkanes, Complete and incomplete Combustion, Cracking.  Haloalkanes, Alkenes, Alcohols, Organic analysis, Analytical Techniques.   RP2:Measuring enthalpy changeRP5: How to distil a product from a reaction**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.  |
| **HALF TERM 4**:  KINETICS/ALKANES AND HALOGENOALKANES **STUDENTS MUST KNOW:** **Kinetics** EGU Reaction Rates, Catalysts, Measuring reaction rates**Organic Chemistry**   KCHAlkanes and petroleum, alkanes as fuels, synthesis of chloroalkanes, halogenoalkanes, nucleophilic substitution and elimination reactions.RP3: Measuring the rate of reaction with changes in temperature.**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.  | **HALF TERM 5:**ORGANIC CHEMISTRY, EQUILIBRIA AND REDOX**STUDENTS MUST KNOW:** **Equilbria and Redox** EGU Reversible reactions, industrial processes, equilibrium constant and factors affecting it. Redox reactions and equations.**Organic Chemistry**   KCHAlkene reactions and addition polymerisation, alcohols, dehydration of alcohols, ethanol production and oxidation of alcohols.**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.  | **HALF TERM 6:**STRUCTURAL DETERMINATION **STUDENTS MUST KNOW:** **Equilbria and Redox** EGU Reversible reactions, industrial processes, equilibrium constant and factors affecting it. Redox reactions and equations.**Organic Analysis and Structural Determination**   KCHTests for functional groups, mass spectroscopy and infrared spectroscopy.RP6: Tests for functional groups**HOW THIS WILL BE ASSESSED:** A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.  |
| **Embedding this knowledge can be supported at home by completion of homework, reviewing information and practicing past papers (**[**www.chemguide.co.uk**](http://www.chemguide.co.uk/)**, www.physicsandmaths**t**utor.com),** **watching videos placed on Sharepoint and reading scientific articles in newspapers, magazines, scientific journals and periodicals.** **Also inspire your further studies with trips to science fairs, The Big Bang Show, Science Live or visit Universities where famous scientists made discoveries; for example the Rutherford Building at The University of Manchester. Also visit Science museums and exhibits.** |